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(54) Title: BONE MORPHOGENETIC PROTEIN (BMP) 2A AND USES THEREOF

(57) **Abstract:** The present invention provides compositions and methods for alleviation or reduction of the symptoms and signs associated with damaged neuronal tissues whether resulting from tissue trauma, or from chronic or acute degenerative changes. In particular, some embodiments of the present invention provide one or more pharmaceutical compositions comprising as an active ingredient a BMP2A inhibitor further comprising a pharmaceutically acceptable diluent or carrier. An additional embodiment provides a method for reducing damage to the central nervous system in a patient who has suffered an injury to the central nervous system, comprising administering to the patient a pharmaceutical composition in a dosage sufficient to reduce the damage. Yet another embodiment provides of the use of a BMP2A inhibitor for the preparation of a medicament for promoting or enhancing recovery in a patient who has suffered an injury to the central nervous system. Preferable inhibitors according to some embodiments of the invention are siRNA molecules and neutralizing antibodies. An additional embodiment provides a method for identifying a chemical compound that modulates apoptosis. Further, a process for diagnosing a neurodegenerative disease or an ischemic event in a subject is provided. The preferred methods, materials, and examples that will now be described are illustrative only and are not intended to be limiting; materials and methods similar or equivalent to those described herein can be used in practice or testing of the invention. Other features and advantages of the invention will be apparent from the following detailed description, and from the claims.

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